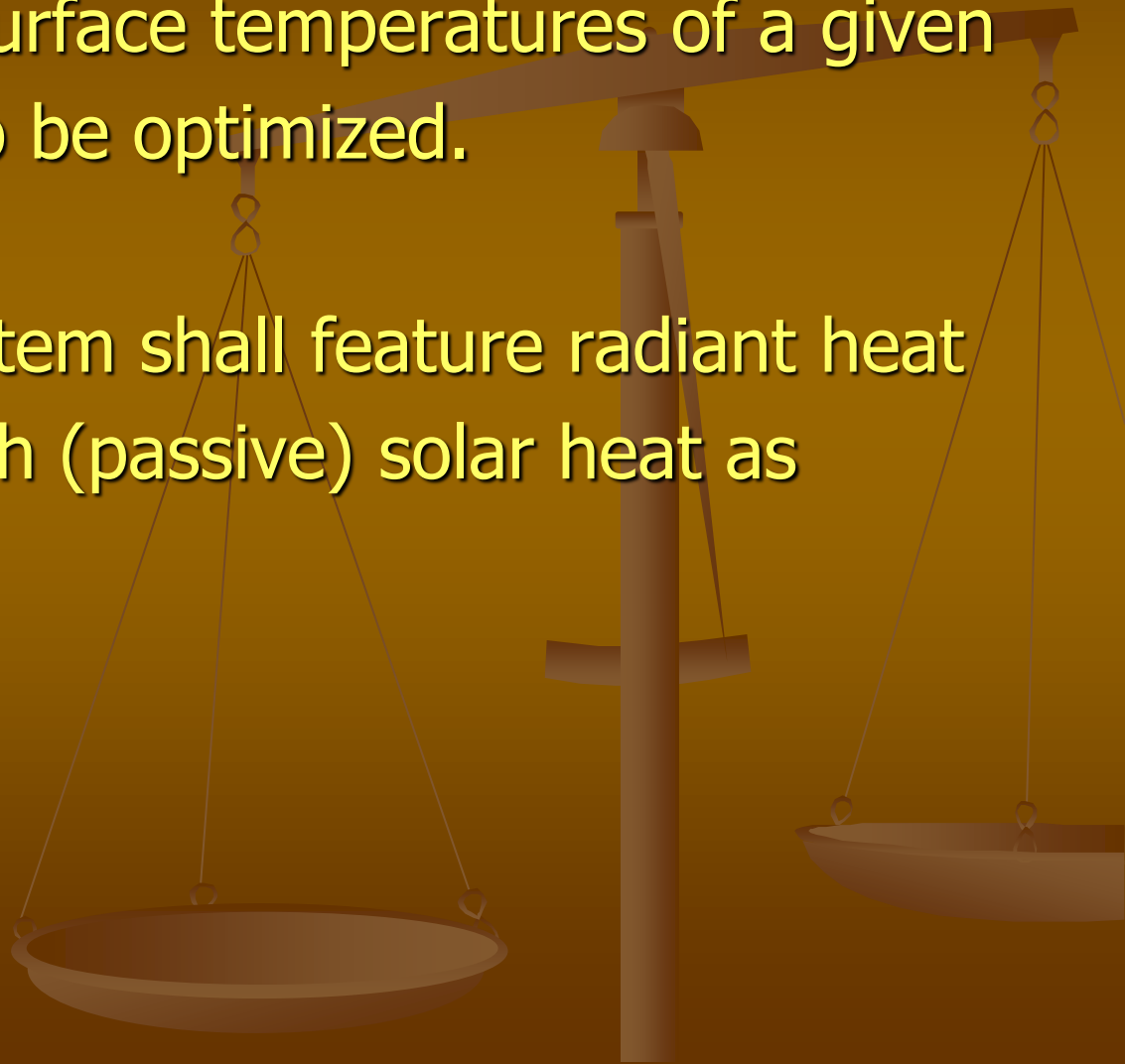
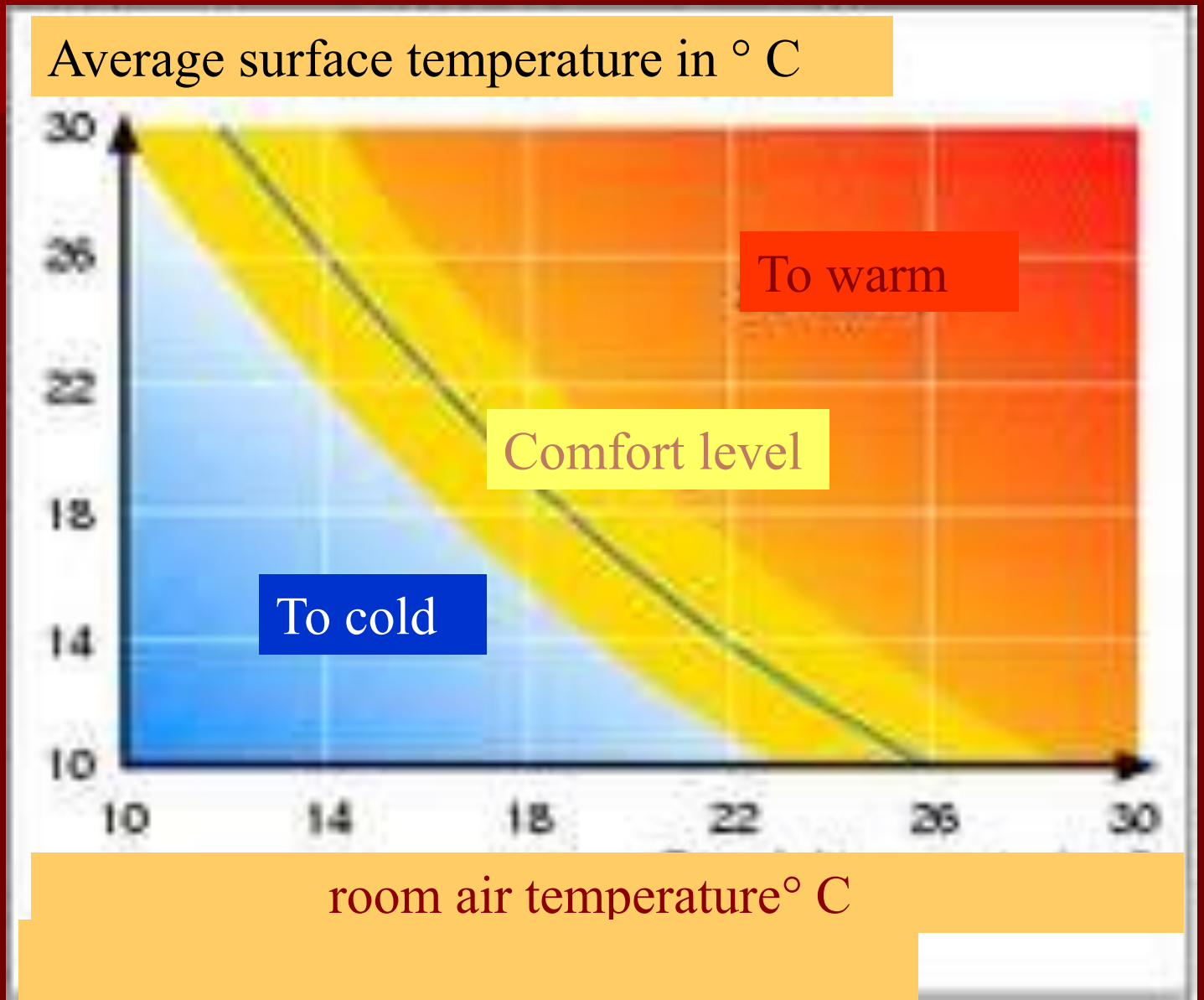
10. The air and surface temperatures of a given room need to be optimized.

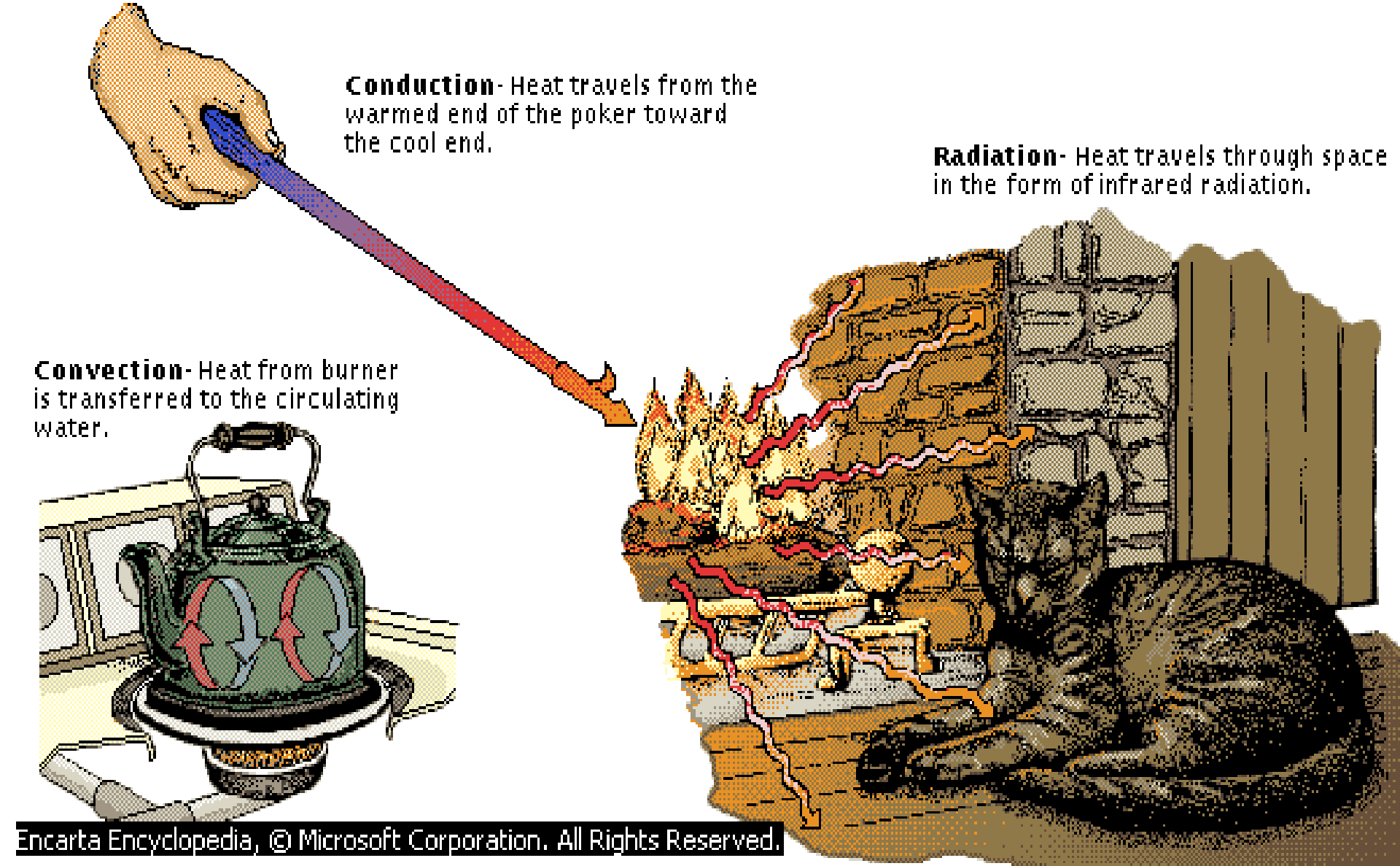
11. A heating system shall feature radiant heat using as much (passive) solar heat as possible.

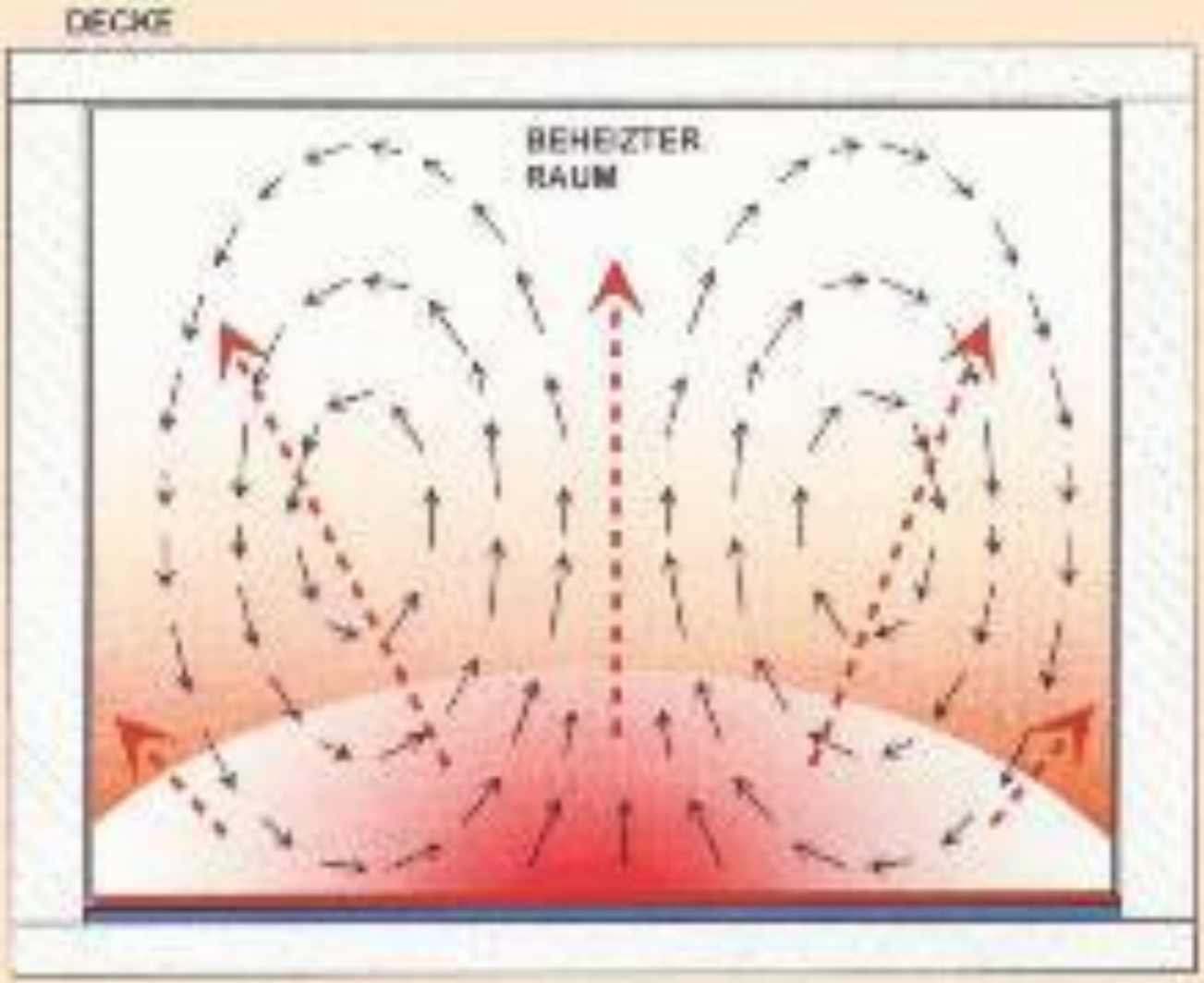


Interrelation between room surface temperature and air temperature



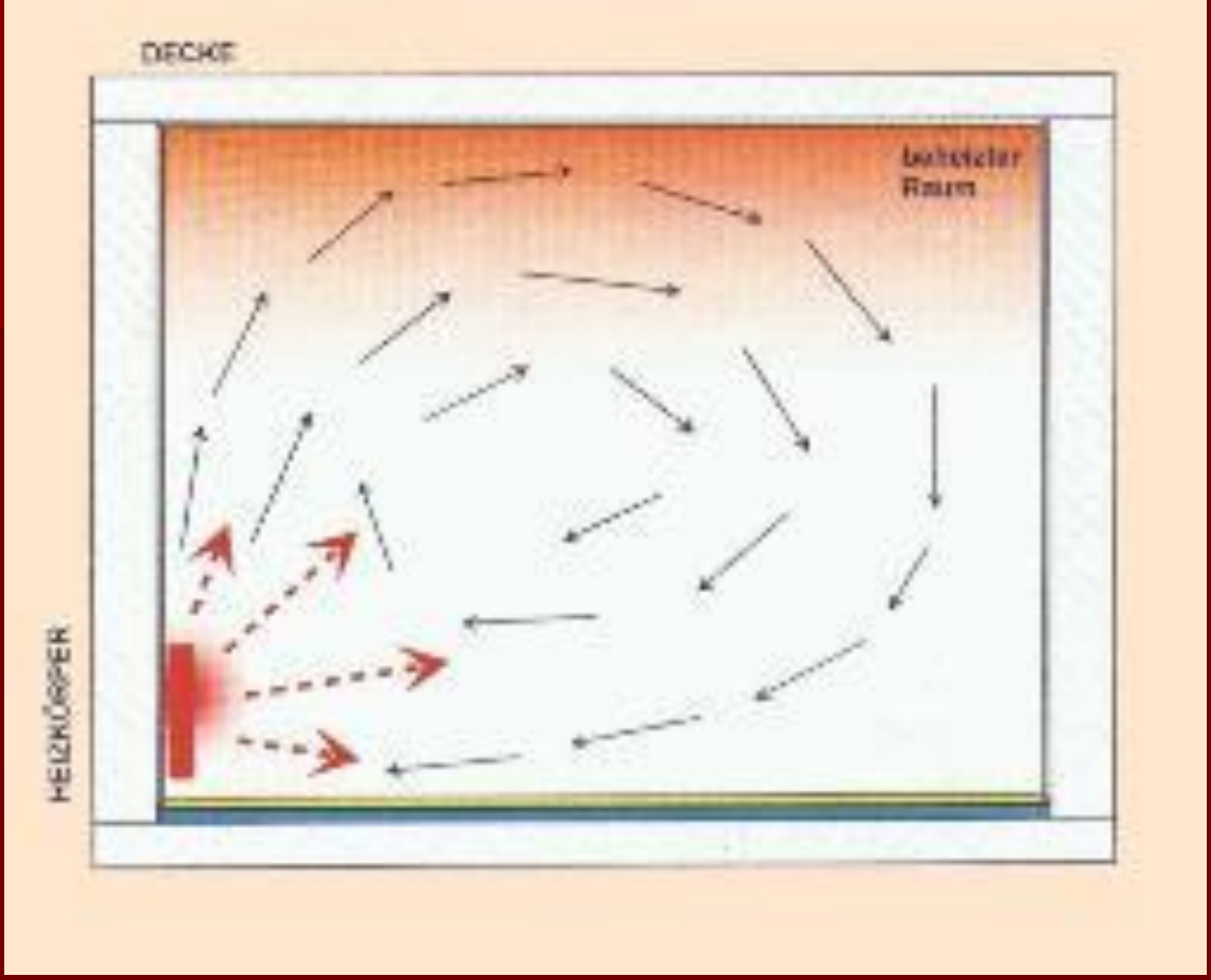
Heat transfer – conduction, convection, radiation



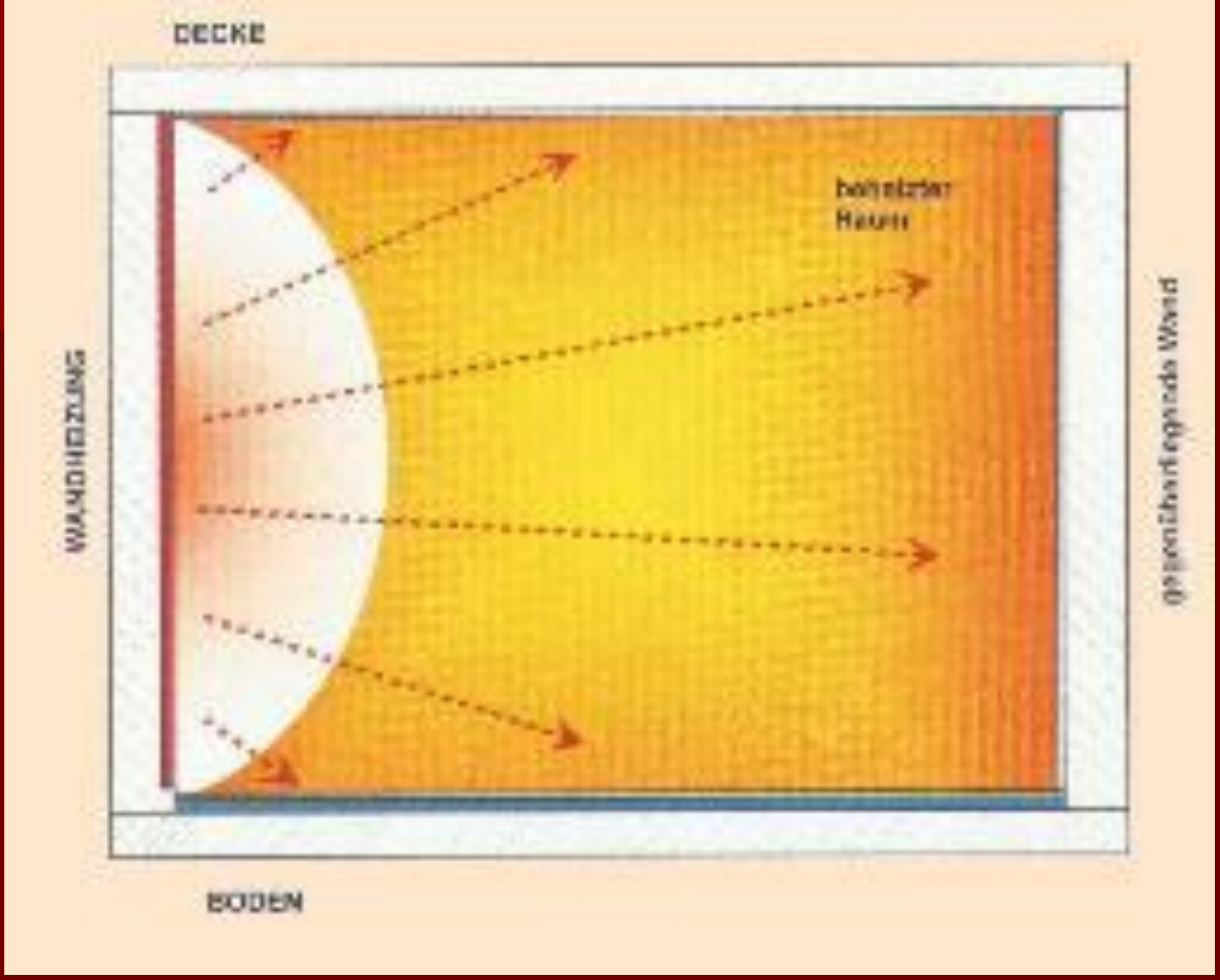


Air ion imbalance through convection (friction)

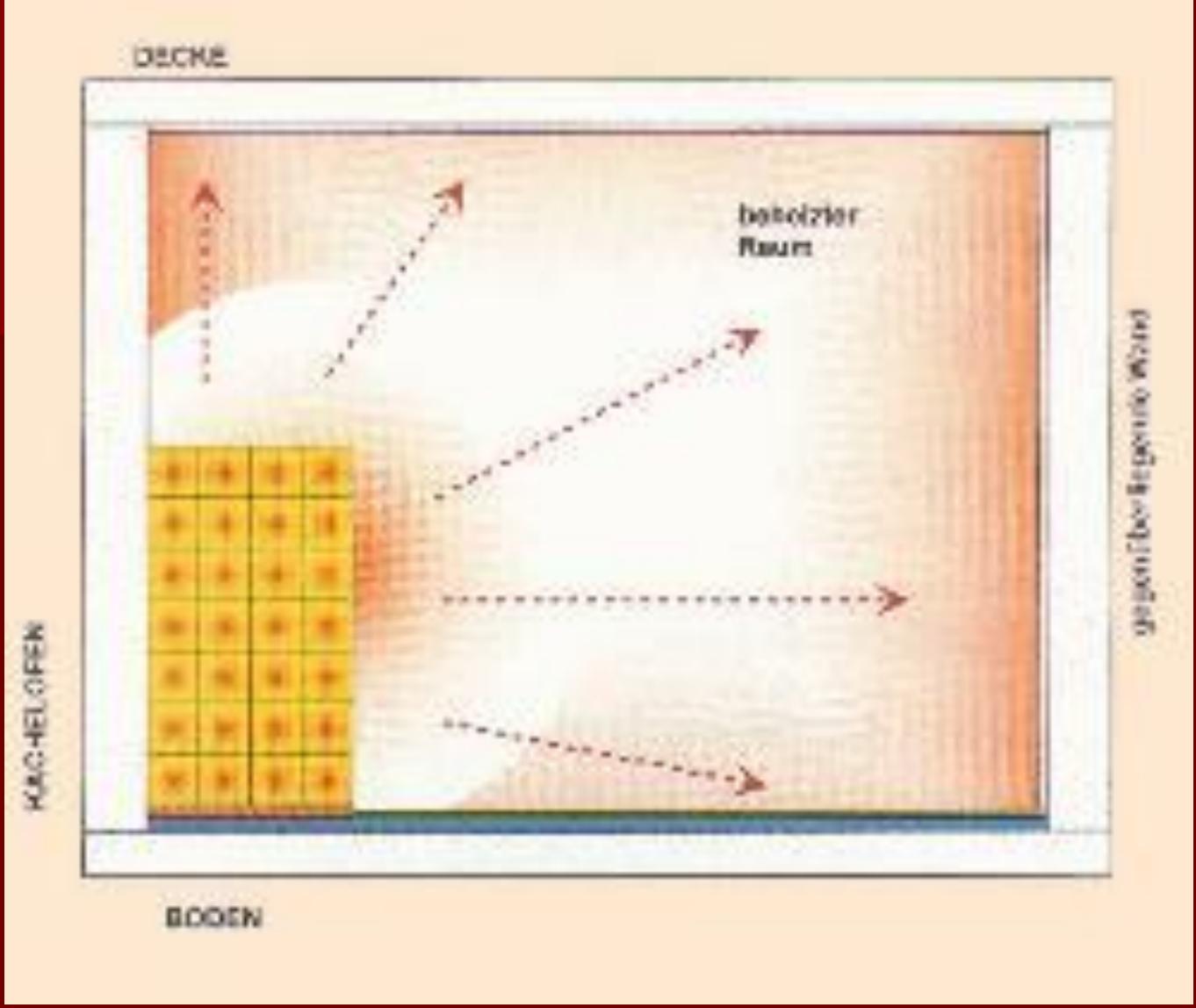
Radiation pattern of floor heat



Radiant heating element



Radiant wall heating

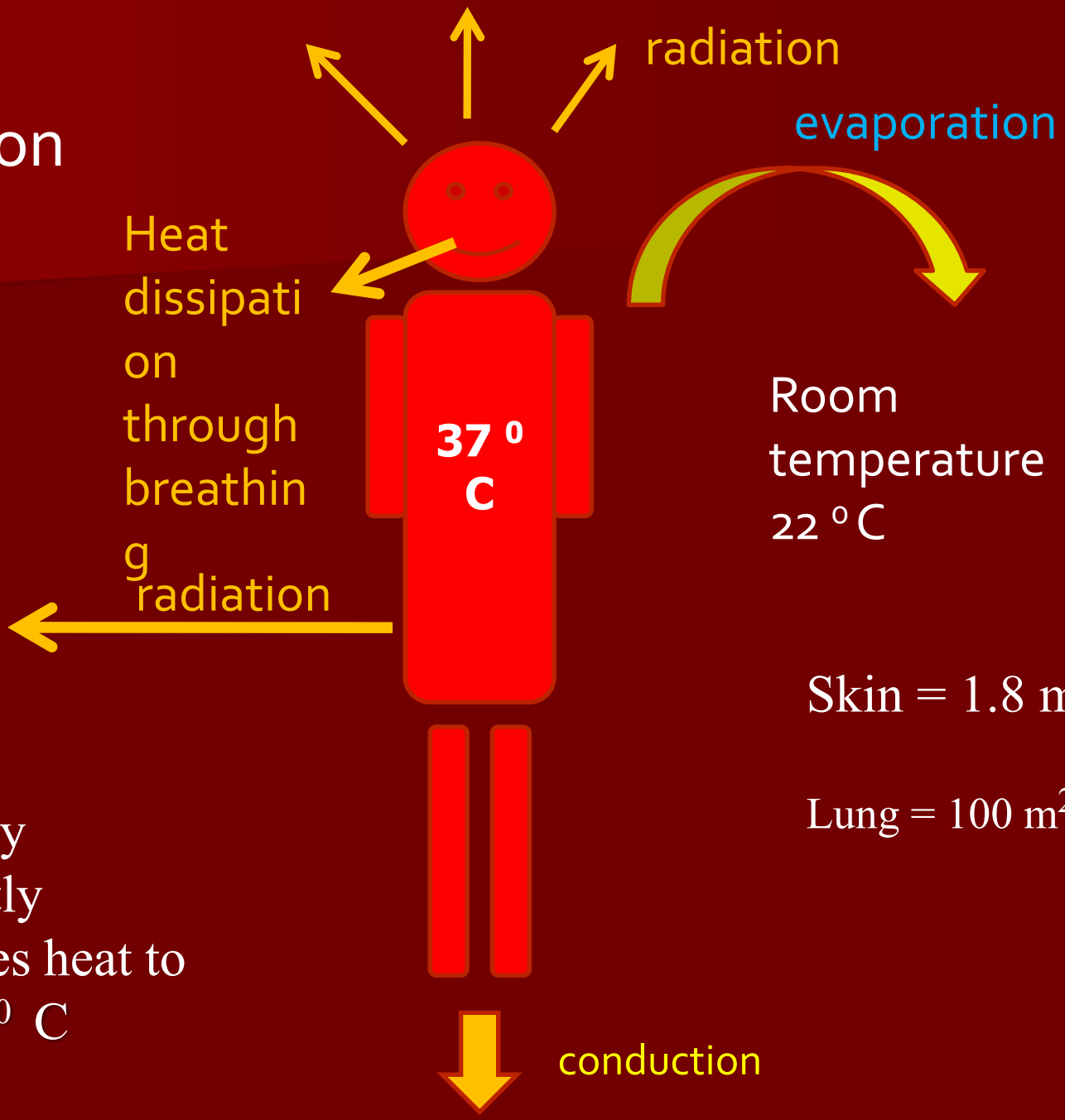


Kachelofen – Tile or masonry stove

The healthy heating system is true radiant heat

- does not heat the skin
- it helps the body to dissipate excess hea
- it supports the body to cool itself
- it optimizes surface temperatures
- is infrared long wave energy
- supports the physiology of the human bod

Heat dissipation of the human body



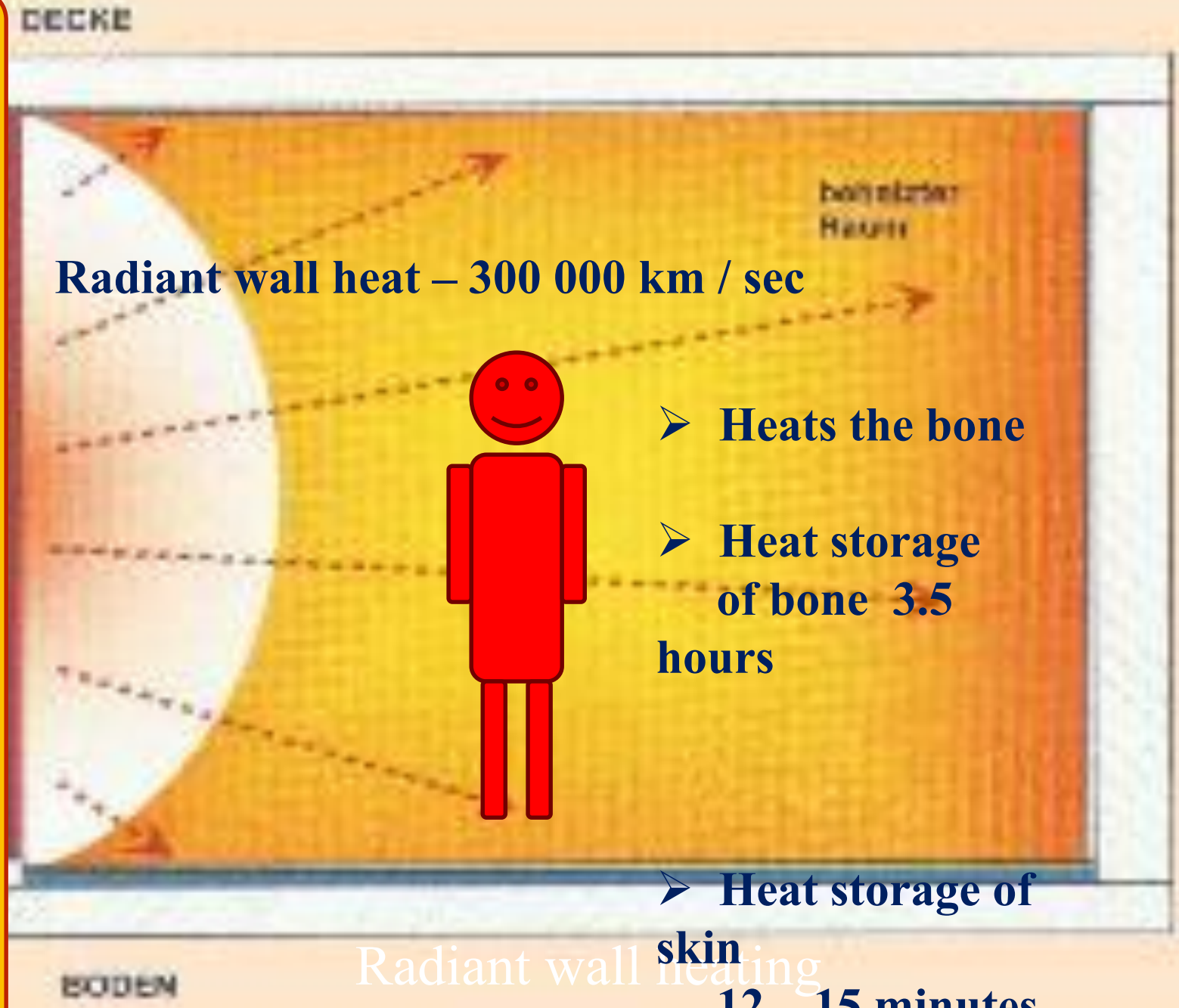
Skin = 1.8 m^2

Lung = 100 m^2

The body constantly dissipates heat to hold 37 ^{0} C

wall

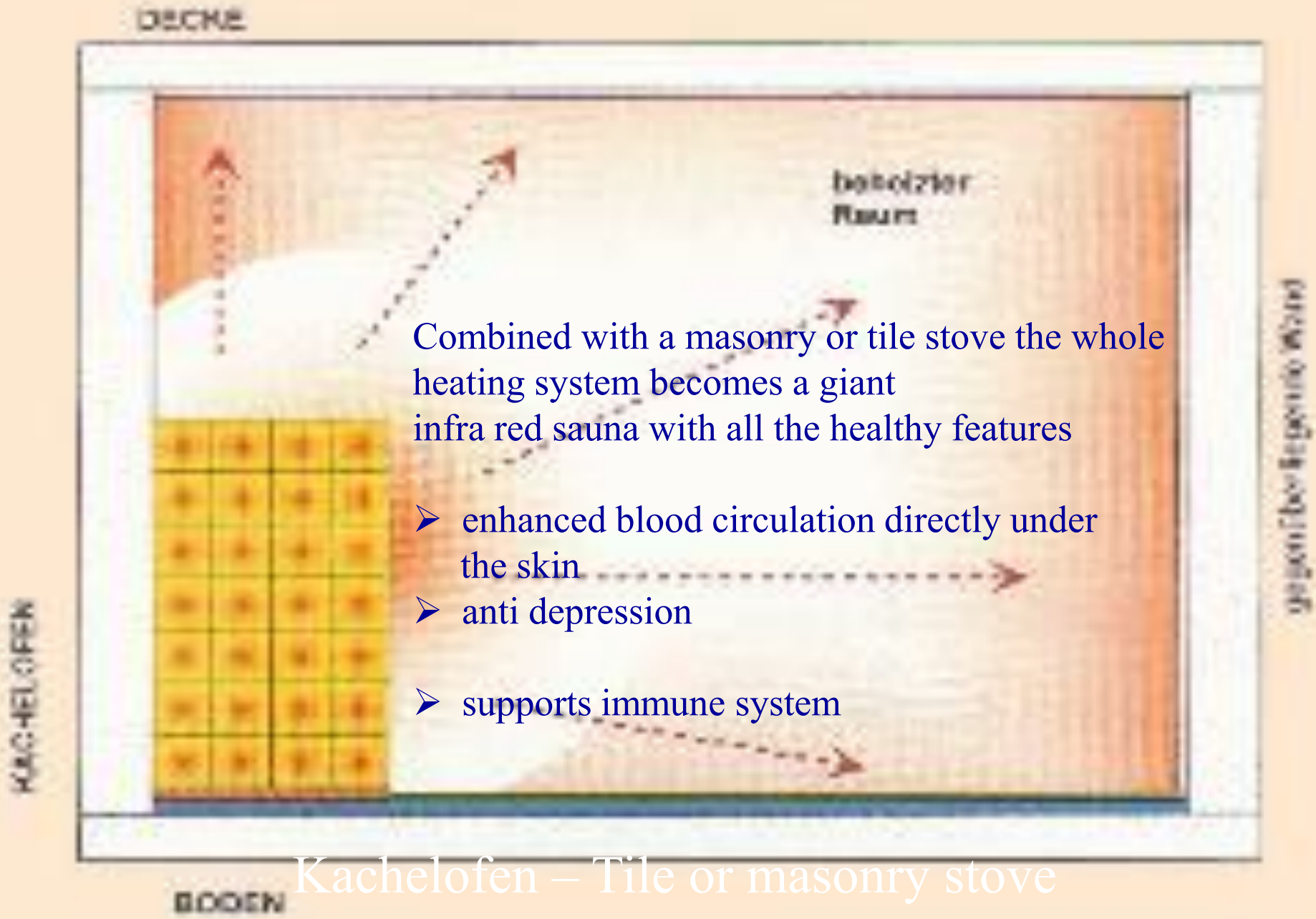
HOT WATER PIPES



Radiant wall heat – 300 000 km / sec

- **Heats the bone**
- **Heat storage of bone 3.5 hours**
- **Heat storage of skin 12 – 15 minutes**

Radiant wall heating



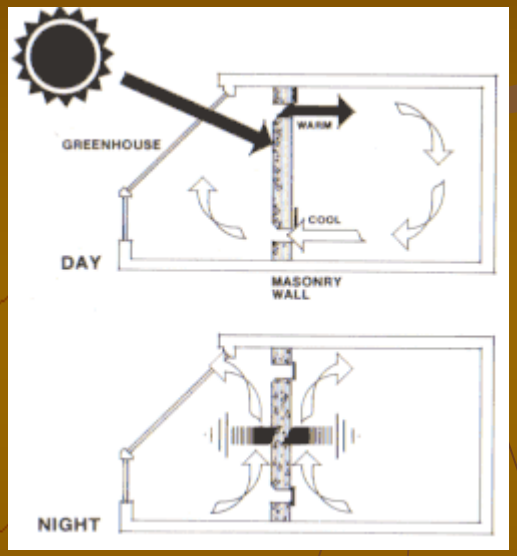
Combined with a masonry or tile stove the whole heating system becomes a giant infra red sauna with all the healthy features

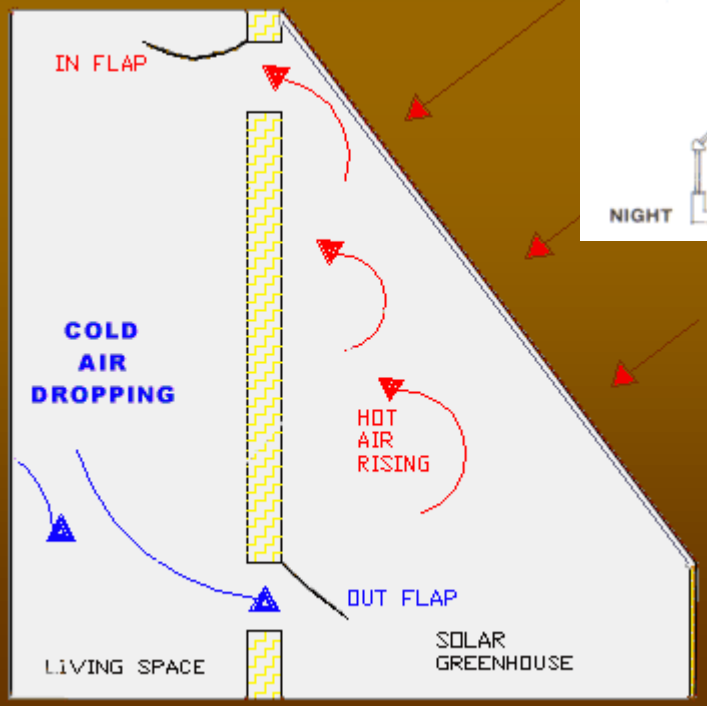
- enhanced blood circulation directly under the skin
- anti depression
- supports immune system

Kachelofen – Tile or masonry stove

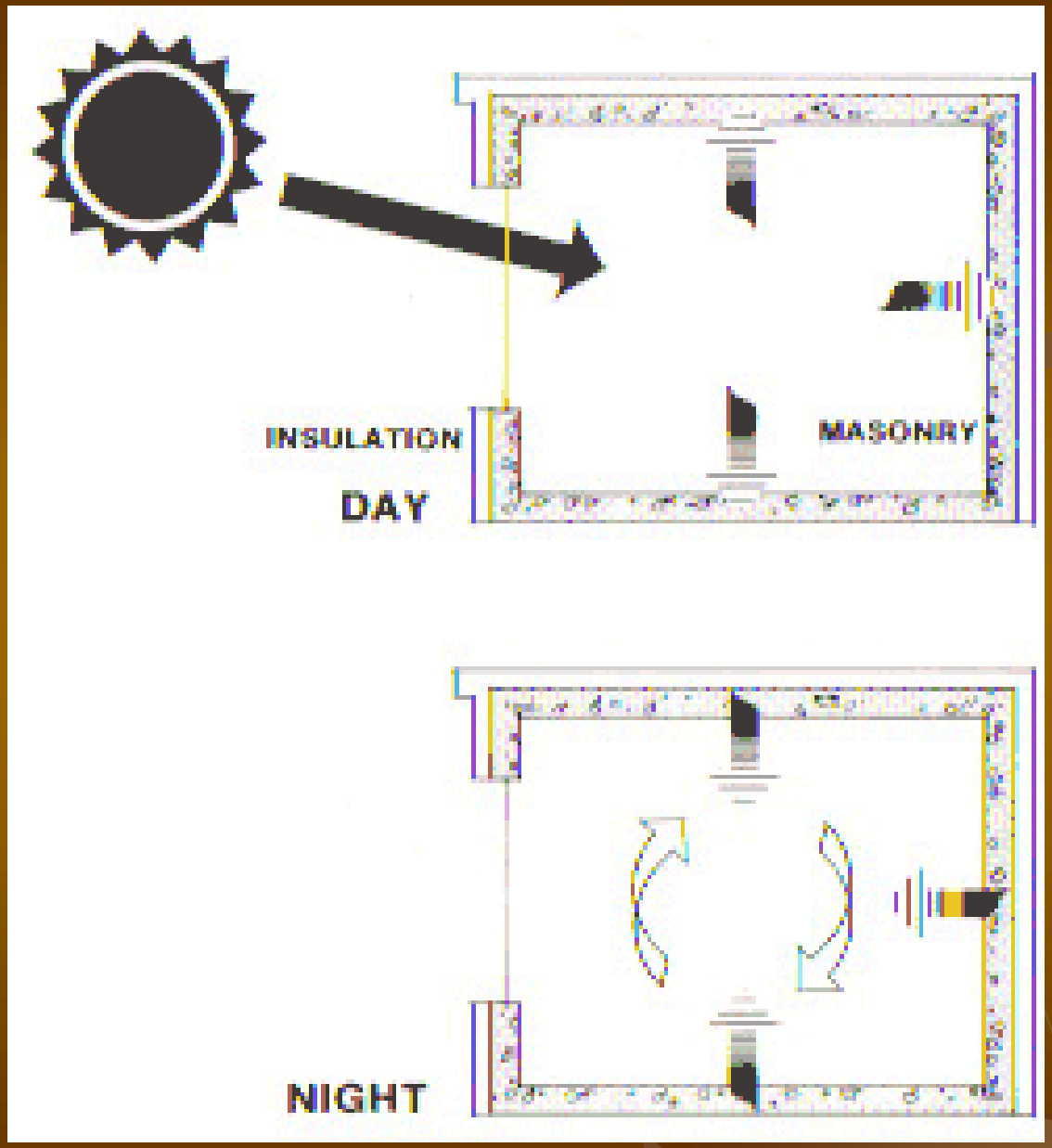
Radiant heat masonry stoves

The Glass House – passive solar

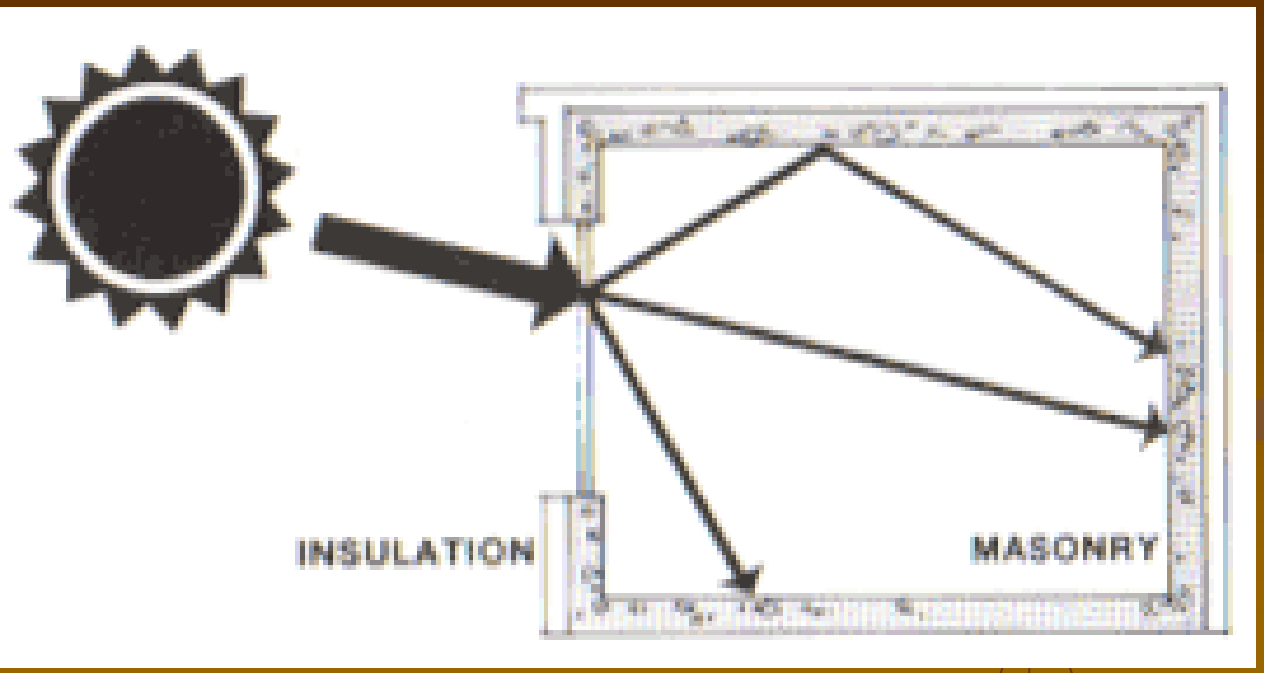




Attached greenhouse with vented storage wall. Heat is stored in the wall during the day - excess heat is vented to the interior space. At night the wall vents are closed and stored heat is radiated to both the greenhouse and the interior space.



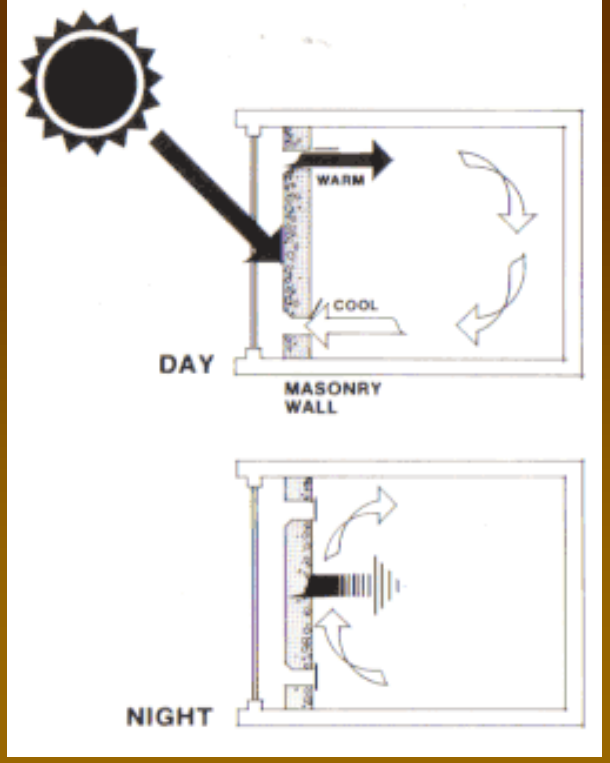
Direct gain design - A direct gain design collects and stores heat during the day. At night stored heat is radiated into the living spaces.



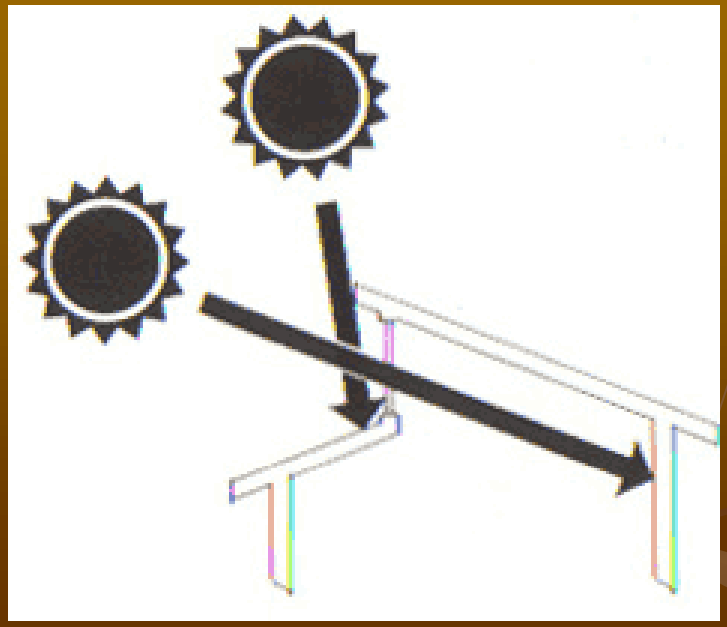
Indirect gain Trombe wall stores heat during the day. Excess heat is vented to the interior space. At night Trombe wall vents are closed and the storage wall radiates heat into the interior space.

Trombe Wall Construction

A typical Trombe wall consists of an 8- to 16-inch thick masonry wall coated with a dark, heat-absorbing material and faced with a single or double layer of glass. The glass is placed from about 3/4" to 6" away from the masonry wall to create a small airspace. Heat from sunlight passing through the glass is absorbed by the dark surface, stored in the wall, and conducted slowly inward through the masonry.

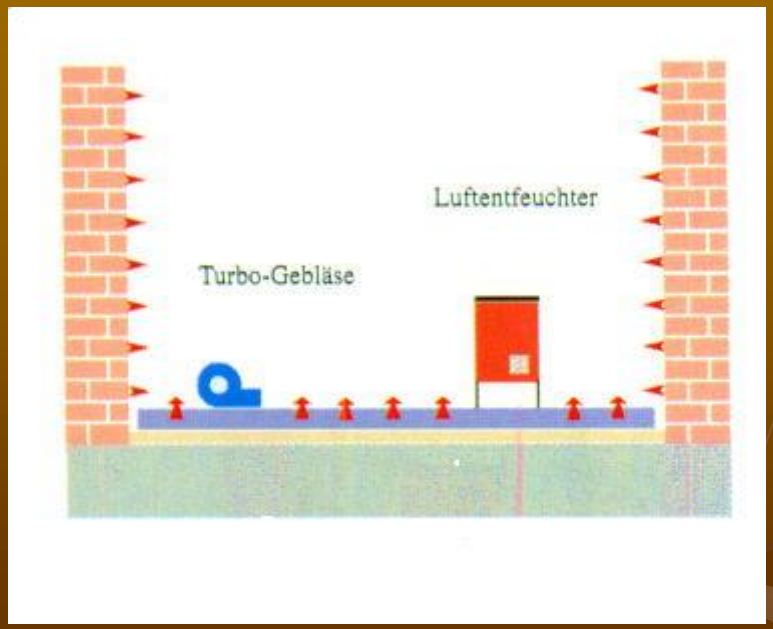


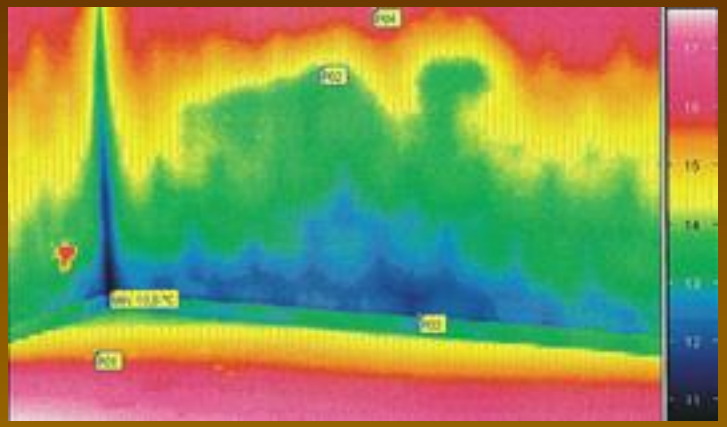
Indirect gain Trombe wall stores heat during the day. Excess heat is vented to the interior space. At night Trombe wall vents are closed and the storage wall radiates heat into the interior space.



Clerestory - clerestories can be used to provide sunshine onto interior walls which would normally not have a clear view of winter sunlight.

12. The total moisture content of a new building shall be low and dry out quickly.





Thermographische Aufnahme einer Innenwand. Zu erkennen sind die durchfeuchteten Bereiche am Sockel und im unteren Bereich der Wand. Der Wassergehalt erniedrigt die Oberflächentem-peratur auf 10,6°C im unmittelbaren Sockelbereich: ideal für die Schimmelpilzbildung (Bild: thermophot).

Wasser wird benötigt um einen Mauerwerks-stein herzustellen, und es wird als Anmach-wasser gebraucht, um diese Steine mit Mörtel zu einem Gebäude zusammenzufügen. Dabei wird aber nicht das gesamte eingesetzte An-machwasser gebunden. Ein nicht unerheblicher Teil wird während des Trocknungsprozesses an die Umgebung abgegeben. Dies ist für die Qualität des Gebäudes wichtig, da Wasser dauerhaft zu Bauschäden führen kann und bereits kurzfristig Eigenschaften, wie z.B. die Wärmeleitfähigkeit negativ beeinflusst.

13. A building shall have a pleasant or neutral smell.
No toxins shall outgas.

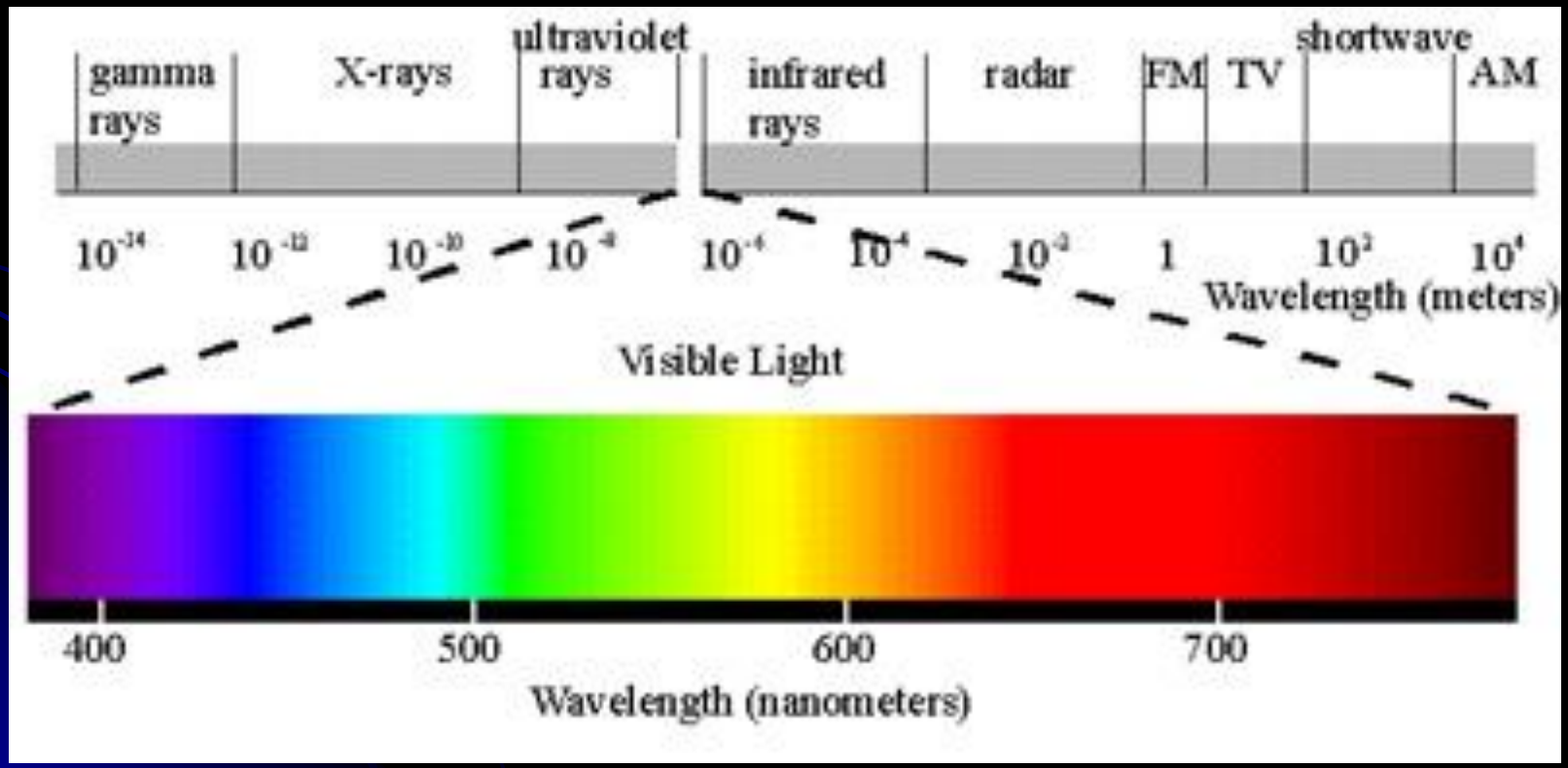


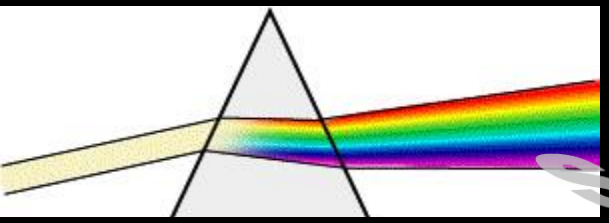


14.Light, lighting and color shall be in accord with natural conditions.

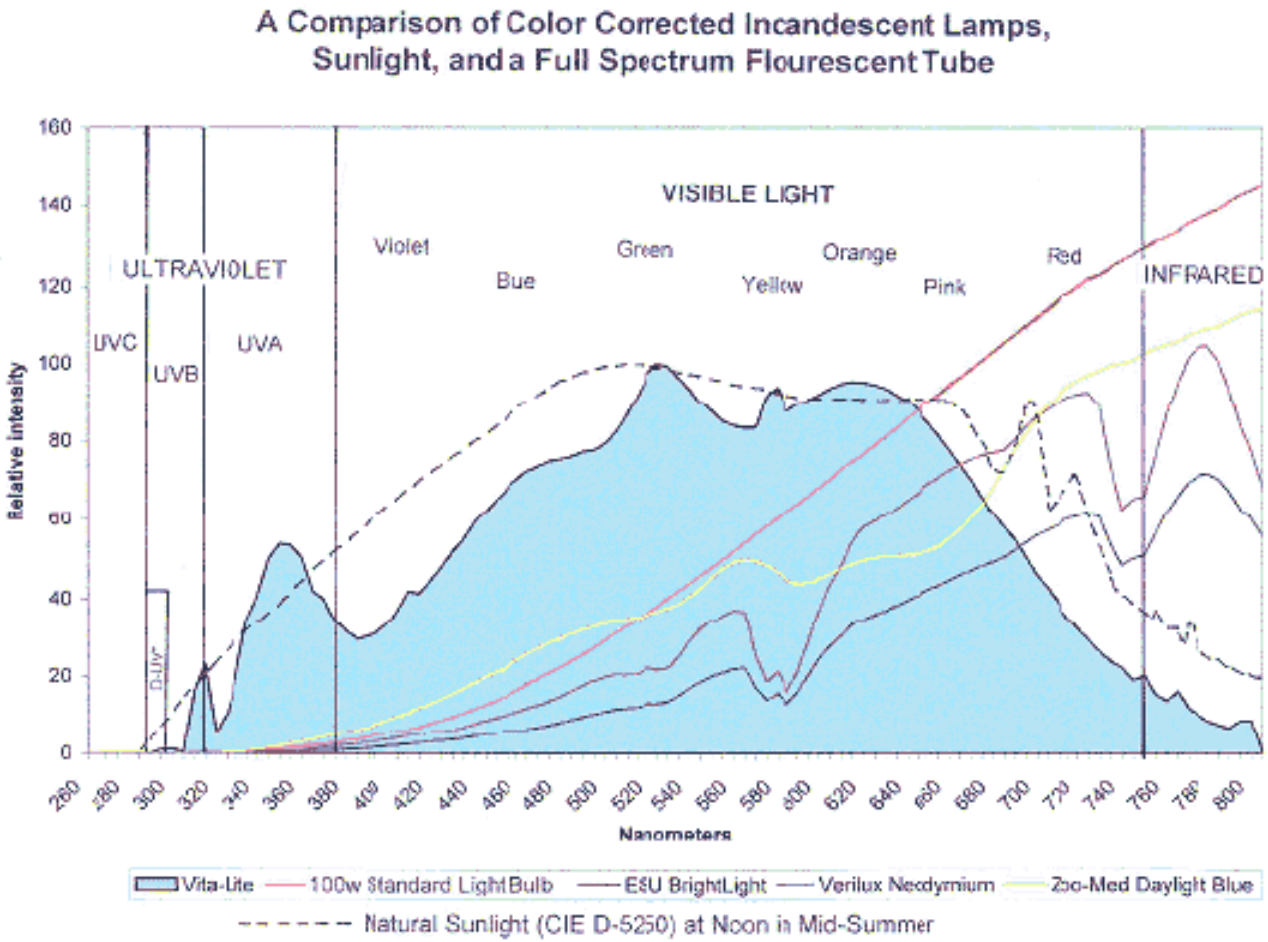
Electromagnetic Spectrum

Light is color. Light is defined as the part of the electromagnetic spectrum that is visible to the human eye. The visible portion of the spectrum covers a wave-length range from approximately 380 nm to 780 nm. The human eye regards the green/yellow portion as brighter and the outer blue/red portion of the spectrum as darker. General purpose lamps are designed to focus in the green/yellow portion of the spectrum to provide brightness when lighting offices, schools, warehouses, etc.



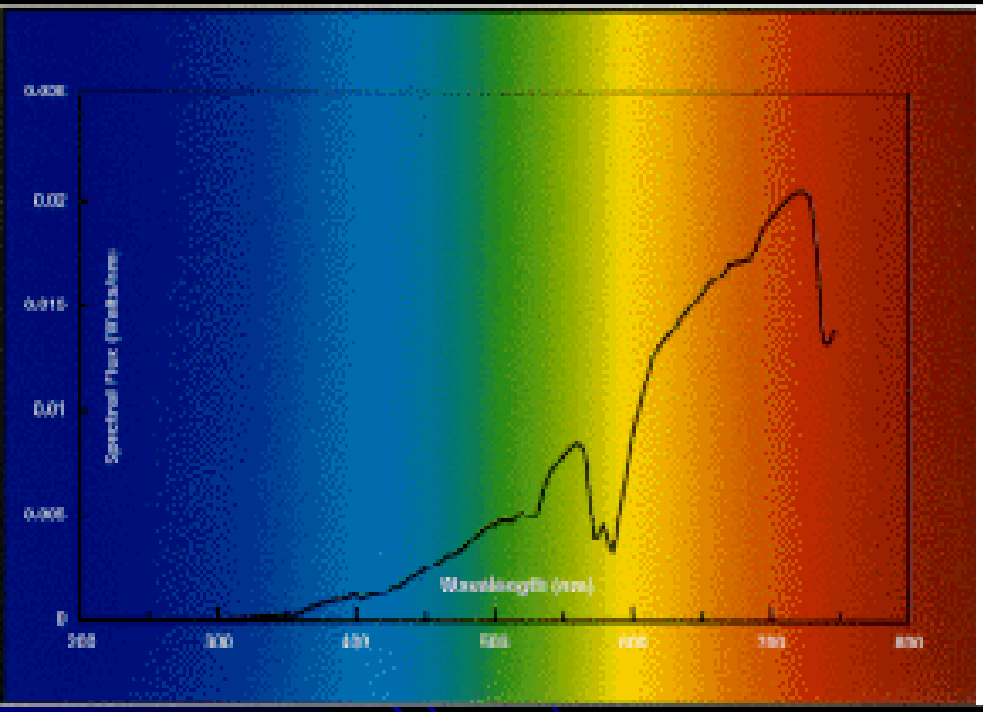


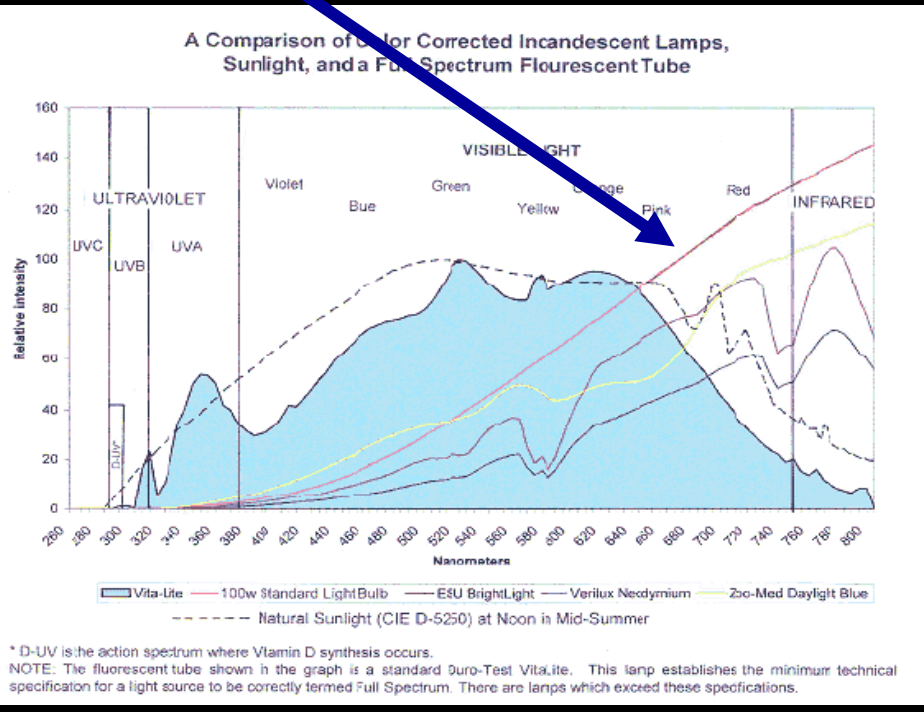
Spectrum Distribution



* D-UV is the action spectrum where Vitamin D synthesis occurs.
NOTE: The fluorescent tube shown in the graph is a standard Duro-Test Vita-Lite. This lamp establishes the minimum technical specification for a light source to be correctly termed Full Spectrum. There are lamps which exceed these specifications.

Full spectrum versus 100 w incandescent bulb





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